The original air compressor is driven by the bull gear and water cooled. Engine coolant is fed to the compressor through a flexible hose tapped into the engine block water jacket and connected to the front of the compressor. Coolant returns from the rear of the compressor through a flexible hose to the engine cylinder head. Lubricating oil is supplied to the compressor by a line from the cylinder block oil gallery that connects to the air compressor. Lubricating oil returns to the engine crankcase through the air compressor drive assembly.

NOTE:
An air compressor oil test card (DD5524) is available to test engine-mounted air compressors for excessive oil leakage. Contact an authorized Detroit Diesel service outlet for details.

The current adaptorless air compressors have replaced the original air compressors and adaptors on the majority of Series 60 on-highway engines. This change took effect with unit serial number 6R210293, built November 30, 1994. The original compressor and adaptor are available on certain on-highway and industrial models due to customer preference.

An optional 28 cfm, twin-cylinder air compressor has replaced the former optional 31 cfm, four-cylinder air compressor, starting with model year 1999. The 28 cfm, high output air compressor is a naturally aspirated design that requires the intake air to be plumbed from the clean air side of the air filter.

Both high-output air compressors require the engine-driven fuel pump to be mounted to the gear case above the air compressor.

For Series 60 2002 Exhaust Gas Recirculation (EGR) engine a naturally aspirated single cylinder reciprocating compressor with a rated displacement of 13 cubic feet per minute at 1250 RPM is used. The engine provides a continuous supply of oil to the compressor. Oil is routed from the oil passage in the gear case to the compressor oil inlet.

Current adaptorless air compressors are similar to the original compressors, except that their mounting flanges have been redesigned to permit direct installation of the compressor onto the gear case. The drive gear stackup on this compressor has been modified to eliminate the need for a drive adaptor. See Figure 10-10.

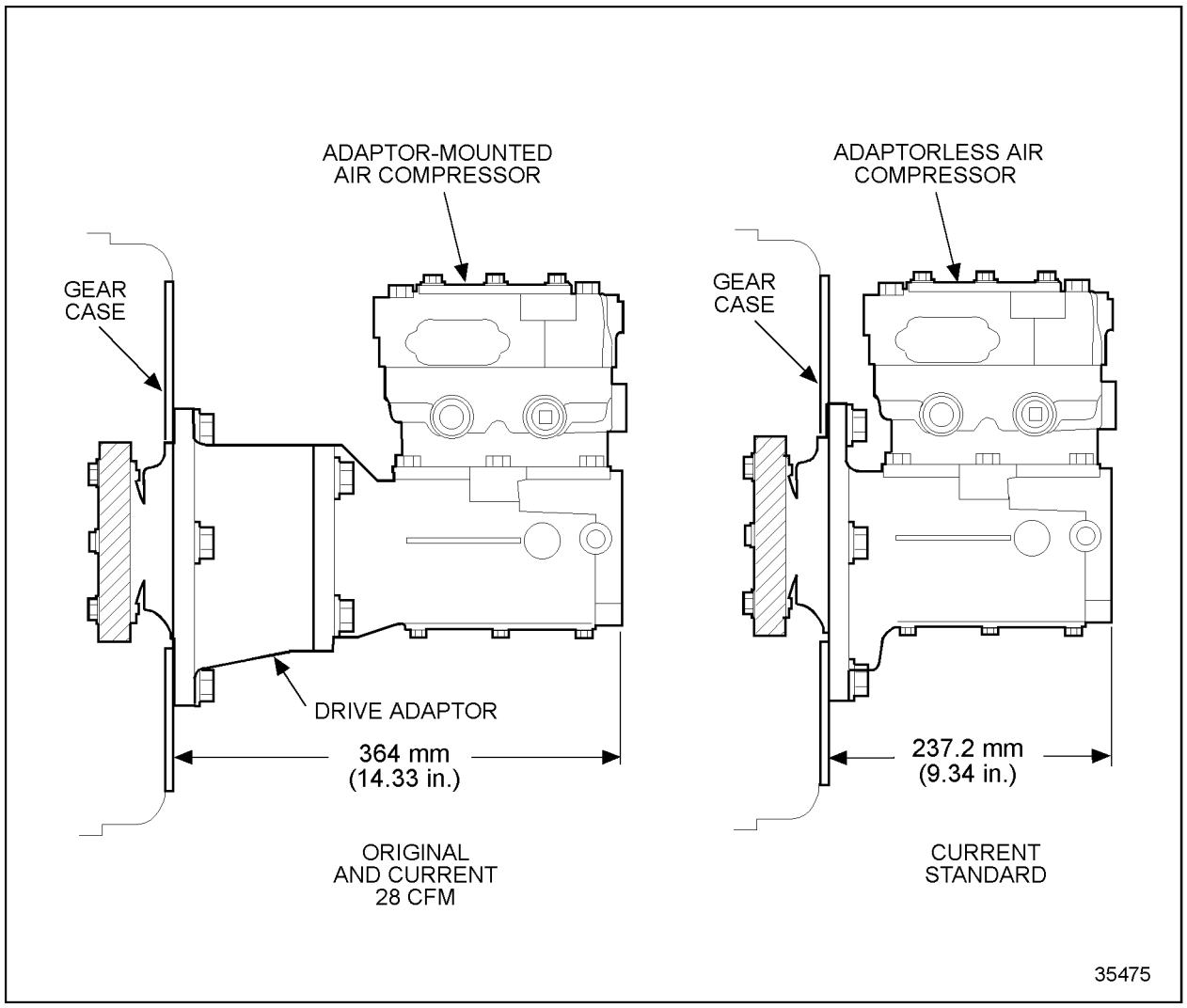

Figure 10-10 Original Adaptor, Current 28 CFM-mounted, and Current Adaptorless Air Compressor

NOTE:
If information is required to service an original air compressor, refer to section 10.1.8.

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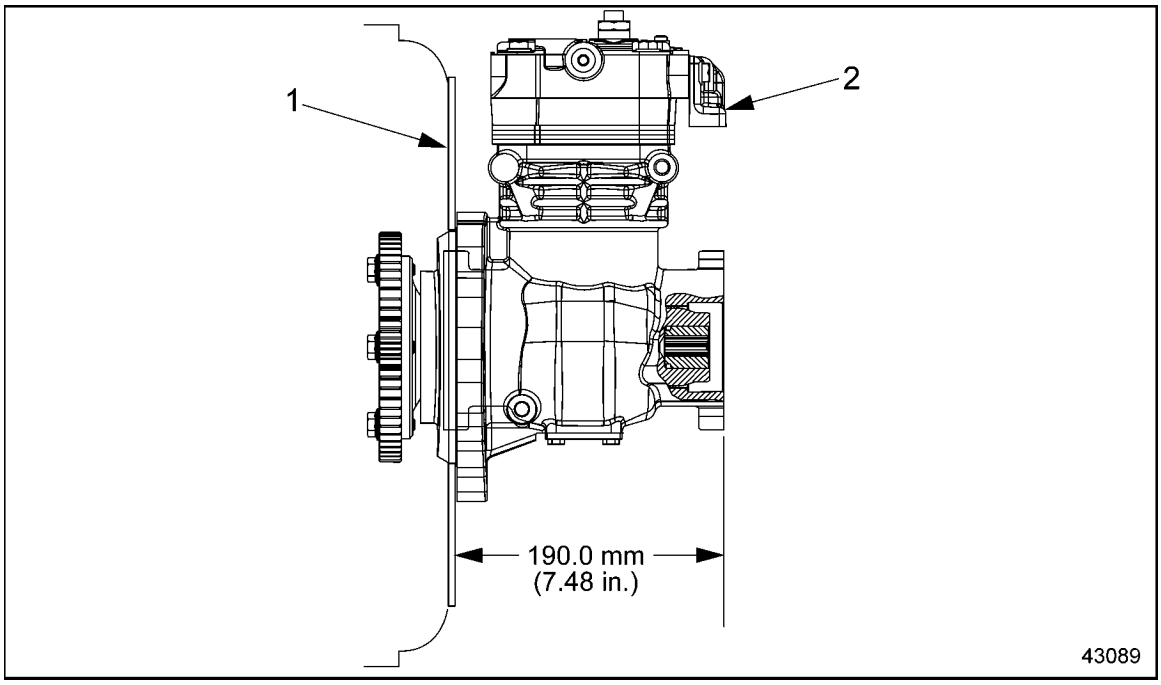

1. Gear Case
2. Single Cylinder Air Compressor

Figure 10-10a Series 60 2002 Single Cylinder Air Compressor 13 CFM

The current Series 60 adaptorless air compressor is flange-mounted to the rear of the gear case, located on the left side of the engine. See Figure 10-11.

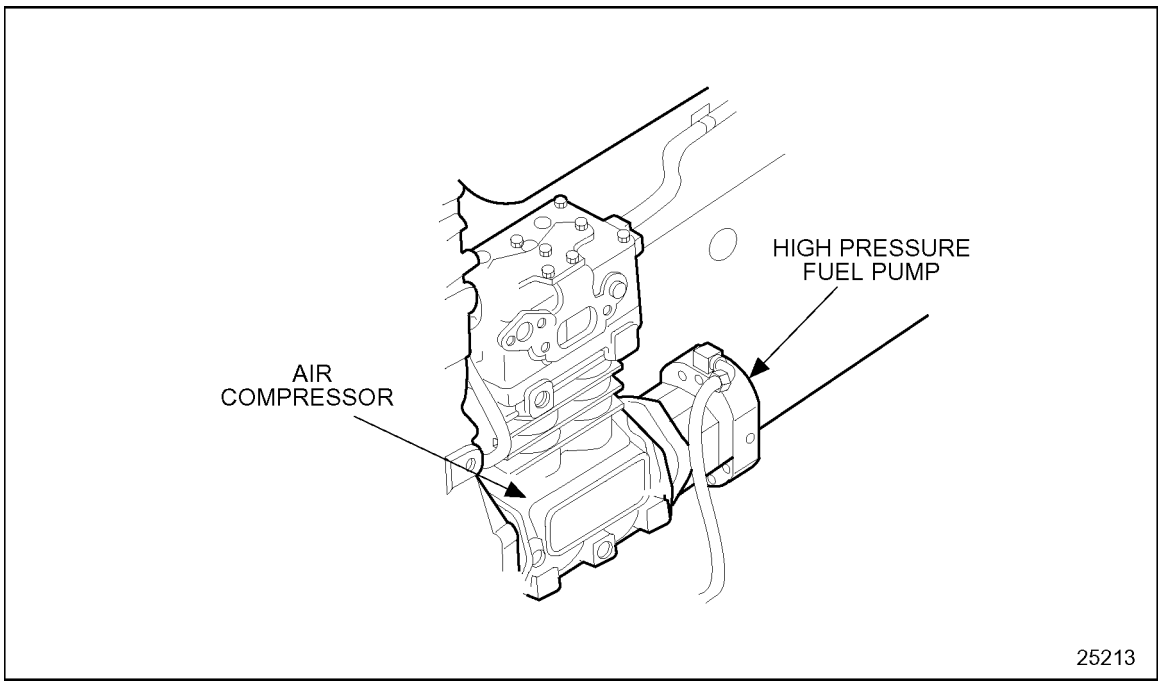

Figure 10-11 Adaptorless Air Compressor Mounting

Current adaptorless air compressors also drive the engine fuel pump which is bolted to the rear end of the compressor. The compressor crankshaft is designed to accept a drive coupling placed between the compressor and fuel pump.

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10.1.1 Replacement of Adaptorless Air Compressor

Detroit Diesel does not service the adaptorless air compressor. Service of an adaptorless air compressor should be referred to an authorized service center of the original equipment manufacturer.

To replace the adaptorless air compressor, perform the following procedure. See Figure 10-12.

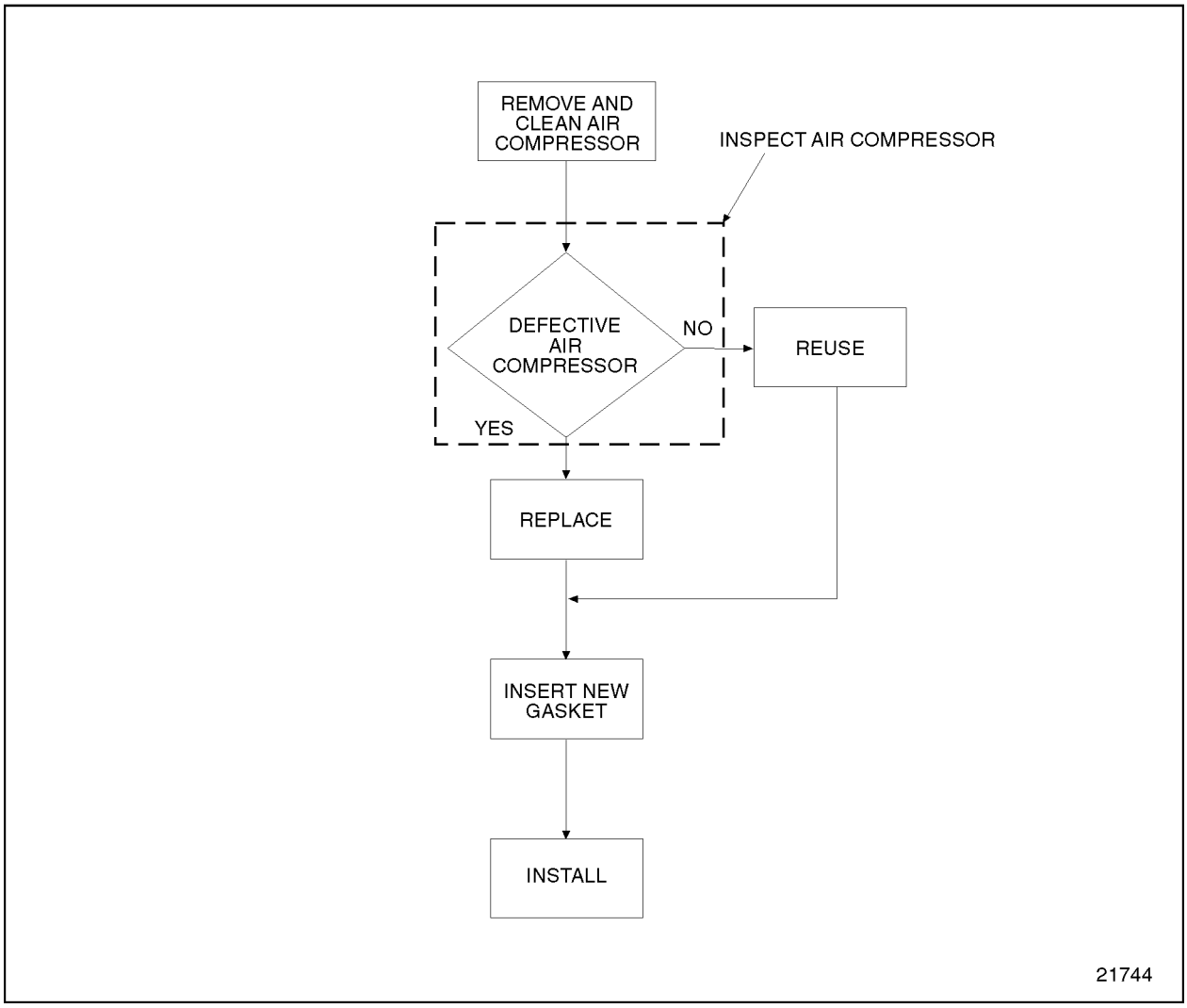

Figure 10-12 Flowchart for Replacement of Adaptorless Air Compressor

10.1.2 Cleaning and Removal of Adaptorless Air Compressor

Precleaning is not necessary.

Remove the adaptorless air compressor as follows:

1. Disconnect the air lines to and from the compressor.
2. Disconnect the fuel pump lines.
3. Remove the fuel pump and drive coupling. Refer to section 2.6.2.
4. Drain the cooling system. Refer to section 13.13.4.
5. Disconnect and drain the coolant supply and return lines at the air compressor.
6. Disconnect the lubricating oil supply line from the compressor.
7. Remove the bolts securing the air compressor support bracket to the cylinder block and air compressor.
8. Remove the support bracket.

NOTE:
Due to the cylinder block and compressor configuration, the upper inside air compressor-to-air compressor drive bolt is difficult to reach with standard tools. Compressor Wrench J 35948 will facilitate removal and installation of this bolt.

9. Remove the five bolts and one nut that secure the air compressor to the gear case.
10. For Series 60 2002 EGR Single Cylinder Air Compressor remove the five bolts that secure the air compressor to the gear case.
11. Slide the air compressor rearward to disengage the hub from the coupling.

10.1.2.1 Inspection of Adaptorless Air Compressor

Refer to OEM guidelines to determine if the air compressor needs to be repaired or replaced.

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10.1.3 Installation of Adaptorless Air Compressor

Install the adaptorless air compressor as follows:

1. Clean all gasket material from the mating surfaces of the air compressor and the gear case.
2. Align the reference mark on the fuel pump drive coupling to the nine o'clock position. This will set the air compressor piston at top dead center and will help to ease the process of checking gear lash.
3. Using a new gasket and bolts and nut previously removed, install the air compressor to its original location on the gear case.

NOTE:
The shorter bolt is installed in the two o'clock position and the nut is installed in the twelve o'clock position.

4. For torquing sequence, see Figure 10-13. Use compressor wrench J 35948 to torque the upper inside bolt. Using the bolt and nut torquing sequence, torque five bolts and one nut to 58–73 N·m (43–54 lb·ft).

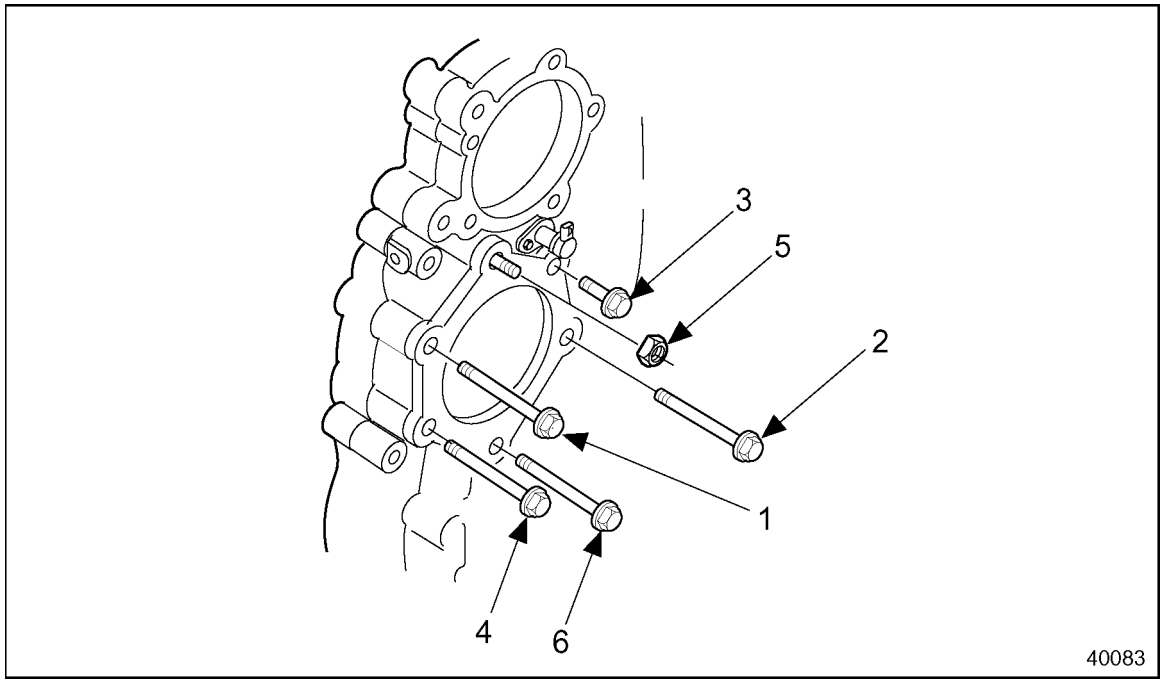

Figure 10-13 Bolt Torque Sequence

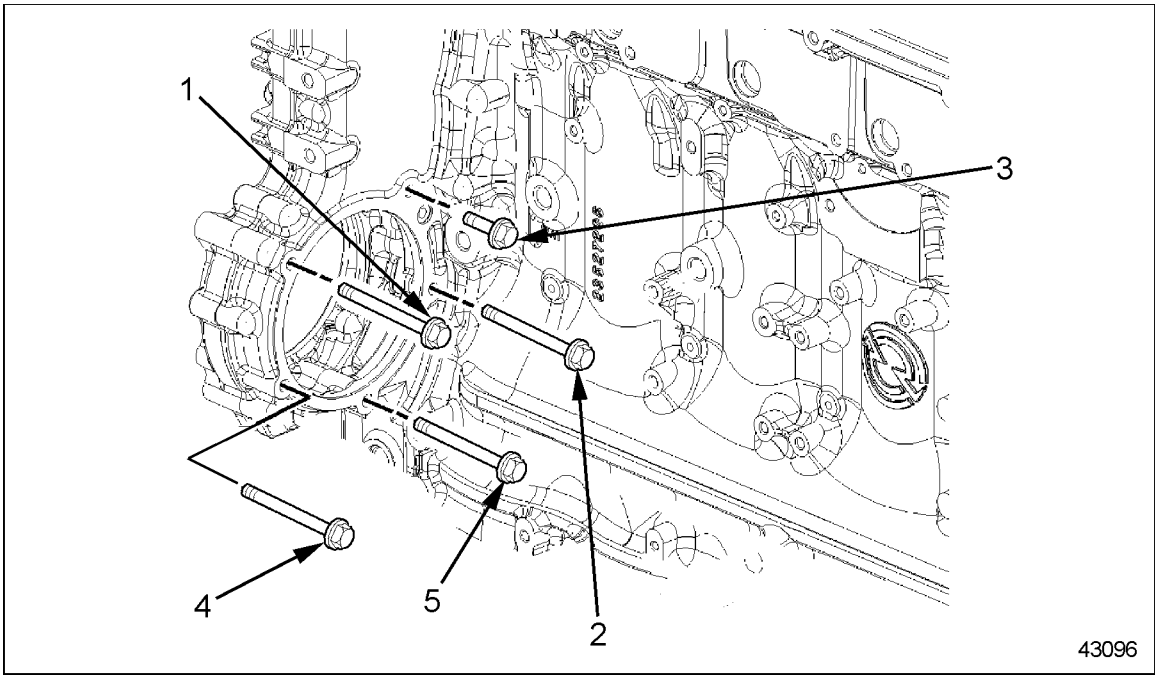

Figure 10-13a Bolt Torque Sequence Series 60 2002 Single Cylinder Air Compressor

5. For torque sequence for Series 60 2002 EGR Single Cylinder Air Compressor see Figure 10-13a. Torque five bolts to 58-73 N·m (43-54 lb·ft).
6. Refer to section 1.21.2.1 step 15 and check the bull gear-to-air compressor drive gear lash measurement.
7. Refer to section 1.21.2.1 step 15 and install the power steering pump drive coupling, power steering pump, and cover assembly to the gear case cover.
8. Install the improved air compressor support bracket to the compressor and cylinder block as follows:
   [a] Tighten the support bracket-to-air compressor bolts. For 25 mm long bolts, use a torque of 41 - 52 N·m (30 - 38 lb·ft). For 20 mm long bolts, use a torque of 30–38 N·m (22–28 lb·ft).
   [b] Torque the support bracket-to-cylinder block bolts to 58 - 73 N·m (43 - 54 lb·ft).

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⚠ CAUTION:

To avoid injury from flying parts when working with components under spring tension, wear adequate eye protection (face shield or safety goggles).

9. Install the hose clamps onto the hoses. Install the coolant supply and return lines and connect them to the air compressor.
10. Install the lubricating oil supply line to the air compressor.
11. Install the air lines to and from the compressor.
12. Refer to section 2.6.6 and install the air compressor-driven fuel pump.
13. Refer to section 13.13.4 and fill the cooling system.

⚠ CAUTION:

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Always start and operate an engine in a well ventilated area.

If operating an engine in an enclosed area, vent the exhaust to the outside.

Do not modify or tamper with the exhaust system or emission control system.

14. Start the engine and check for leaks.

10.1.4 Replacement of the Original-type Air Compressor

Detroit Diesel does not service the original-type air compressor. Service of the original-type air compressors should be referred to an authorized service center of the original equipment manufacturer.

To replace the original-type air compressor, perform the following procedure. See Figure 10-14.

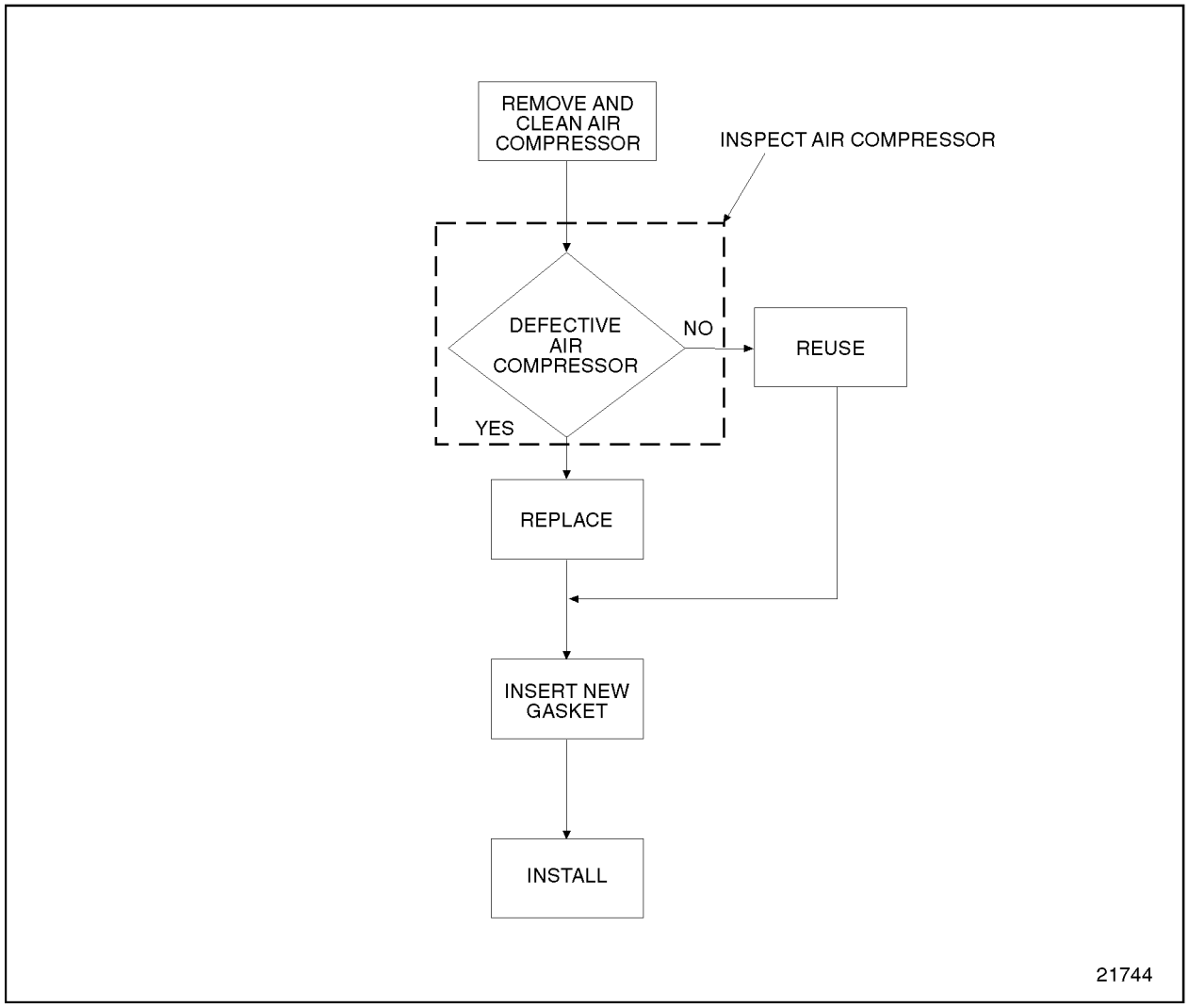

Figure 10-14 Flowchart for Replacement of the Original-type Air Compressor

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